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Question of Antarctica

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Report of the Secretary-General**

Summary

The present report has been prepared by the United Nations Environment Programme in response to General Assembly resolution 57/51 on the question of Antarctica, in particular paragraph 4 of that resolution, in which the Assembly requested that a report be submitted to it at its sixtieth session on the information supplied by the Antarctic Treaty Consultative Parties on their meetings and activities in Antarctica and on developments in relation to Antarctica.

The report is based on information drawn from the final reports of the Twenty-fifth to the Twenty-eighth Antarctic Treaty Consultative Meetings and information made available by the parties. It highlights the activities of the Antarctic Treaty system and international bodies and recent developments pertaining to the Antarctic environment.

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** The report was delayed in submission to allow its thorough revision by all relevant offices of the United Nations Environment Programme.

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I. Introduction

1. The present report has been prepared in response to General Assembly resolution 57/51 of 22 November 2002, in particular paragraph 4, in which the Assembly requested that a report on the information supplied by the Antarctic Treaty Consultative Parties on their meetings, their activities in Antarctica and on developments in relation to Antarctica be submitted to the Assembly at its sixtieth session.

2. Information has been drawn from the reports of the Twenty-fifth to the Twenty-eighth Antarctic Treaty Consultative Meetings (Warsaw, 10 to 20 September 2002; Madrid, 9 to 20 June 2003; Cape Town, South Africa, 24 May to 4 June 2004; and Stockholm, 6 to 17 June 2005), and information that the Parties made available to United Nations Environment Programme (UNEP). The report is supported, as appropriate and necessary for its comprehensiveness, by factual information contained in documents referred to in the reports of the Consultative Meetings. References have been omitted in the report to comply with rules on word limitation.

II. Activities of the Antarctic Treaty system and international bodies

A. Antarctic Treaty

3. The Antarctic Treaty was adopted on 1 December 1959 and entered into force on 23 June 1961. During the period under review there has been no new accession to the Treaty. Ukraine acquired the status of Consultative Party on 27 May 2004. As at June 2005 there were 45 States parties to the Treaty, of which 28 are Consultative Parties.

4. The primary purpose of the Antarctic Treaty is to ensure, in the interest of all mankind, that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord. The Treaty provides for freedom of scientific investigation and promotes international cooperation in scientific research. It also prohibits any nuclear explosions and the disposal of radioactive waste material in Antarctica.

5. To ensure the observance of the provisions of the Treaty, Consultative Parties may carry out inspections in all areas of Antarctica. Since 2002, three inspections have been carried out. In January-February 2004, Finland undertook an inspection of 4 stations (Troll (Norway), SANAE IV (South Africa), Wasa (Sweden) and Neumayer (Germany)), all situated in Dronning Maud Land. Australia carried out an inspection in January 2005 of a number of facilities, including 2 stations (McMurdo (United States of America) and Scott Base (New Zealand)), one vessel (*RV Nathaniel B. Palmer* (United States)) and one logistic facility (United States) on the Ross Ice Shelf. In February-March 2005, the United Kingdom of Great Britain and Northern Ireland, Australia and Peru undertook a joint inspection of 14 stations (Comandante Ferraz (Brazil), Esperanza (Argentina), King Sejong (Republic of Korea), Great Wall (China), Bellingshausen (Russian Federation), Gabriel de Castilla (Spain), Base Decepción (Argentina), Juan Carlos I (Spain), St. Kliment Ochridiski (Bulgaria), Petrel (Argentina), Vice Comodoro Marambio (Argentina), Akademik Vernadsky (Ukraine), San Martín (Argentina) and Rothera Research

Station (United Kingdom)); 8 unoccupied stations (T/N Ruperto Elichiribehety (Uruguay), Capitán Arturo Prat (Chile), Pedro Vicente Maldonado (Ecuador), Risopatrón (Chile), Yelcho (Chile), Almirante Brown (Argentina), Gabriel González Videla (Chile) and Teniente Luis Carvajal Villarroel (Chile)); 1 unnamed station under construction (Czech Republic); five Historic Sites and Monuments ("Base A", Port Lockroy (United Kingdom), "Base F", Wordie House, Winter Island (United Kingdom), "Base E", Stonington Island (United Kingdom), Stonington — East Base (United States) and "Base Y", Horseshoe Island (United Kingdom)); and one vessel (*MV Professor Molchanov* (Russian Federation)). All inspected stations and facilities were found to be in compliance with the objectives and provisions of the Treaty.

6. The three inspections also checked the implementation of the Madrid Protocol. A high degree of understanding of the Protocol was noted. Positive developments were also noted with regard to the use of alternative energy systems, such as wind and solar, that help reduce fuel consumption. However, a number of areas for improvement were identified, including fuel transfer and storage containment; oil spill contingency plans; the environmental impact assessment of current activities; air emission filtering and monitoring; and sewage treatment systems. One inspection found a significant number of stations unoccupied and little coordination in scientific research, even among neighbouring stations, in the Antarctic Peninsula.

7. Every year the Consultative Parties hold meetings to exchange information, consult on matters of common interest pertaining to Antarctica and formulate and recommend to their Governments measures to further the principles and objectives of the Treaty. International organizations have also been invited to attend as experts since 1989.

8. On 1 September 2004, the secretariat of the Antarctic Treaty, established in Buenos Aires, became operational.

B. Protocol on Environmental Protection to the Antarctic Treaty

9. The Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol) entered into force on 14 January 1998. During the period under review, Canada, the Czech Republic and Romania acceded to the Protocol. As at June 2005 there were 32 Parties to the Protocol, including all Consultative Parties and four non-Consultative Parties (Greece, Romania, Canada and the Czech Republic).

10. The main purpose of the Madrid Protocol is to provide for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems. The Protocol designates Antarctica as a natural reserve, devoted to peace and science; prohibits mineral resource activities other than scientific research; and sets principles and measures for the planning and conduct of all activities in the Antarctic Treaty area. The Protocol comprises six annexes, dealing with environmental impact assessment (Annex I), conservation of Antarctic fauna and flora (Annex II), waste disposal and waste management (Annex III), prevention of marine pollution (Annex IV), area protection and management (Annex V) and liability arising from environmental emergencies (Annex VI). Annexes I to IV formed an integral part of the Protocol at the time of its adoption. Annex V, which was adopted subsequently, entered into force on 24 May 2002.

11. Annex VI to the Madrid Protocol on liability arising from environmental emergencies was adopted in June 2005. The Annex is the result of 12 years of negotiations. For further details, see section III.J below.

12. In accordance with a new practice, annual reports on national implementation of the Protocol are made available on national programmes' websites.

13. As foreseen in articles 11 and 12 of the Protocol, a Committee for Environmental Protection has been established to, inter alia, provide advice and formulate recommendations on the implementation of the Protocol for consideration at the Consultative Meetings. Since the entry into force of the Protocol, the Committee has met once each year in conjunction with the Consultative Meetings.

C. Convention for the Conservation of Antarctic Seals

14. The Convention for the Conservation of Antarctic Seals entered into force on 11 March 1978. Since the Twenty-fifth Antarctic Treaty Consultative Meeting, there have been no accessions to the Convention. As at June 2005, there were 16 States parties. The United Kingdom, as the depositary Government, reported on the numbers of the six species of Antarctic seal captured or killed in the Convention area (the sea south of 60 degrees latitude south) by States parties to the Convention during the period from 1 March 2000 to 28 February 2003. For detailed information see table 2 of section III.H below.

D. Convention on the Conservation of Antarctic Marine Living Resources

15. The Convention on the Conservation of Antarctic Marine Living Resources entered into force on 7 April 1982. Since the Twenty-fifth Antarctic Treaty Consultative Meeting, there has been one new accession to the Convention (Mauritius). As at June 2005, there were 32 parties.

16. The Commission for the Conservation of Antarctic Marine Living Resources reported on fisheries in the Convention area by States parties to the Convention for the 2000/2001, 2001/2002, 2002/2003 and 2003/2004 seasons. Those data are summarized in section III.H below.

17. The integrated fisheries management framework, including fishery plans, has been further developed. Fishery plans are available for all krill, icefish and toothfish fisheries in the Convention Area.

18. Illegal, unreported and unregulated fishing in the Convention Area remains a major challenge to the Commission which is pursuing the development, implementation and promotion of mechanisms to address such activities (see section III.H).

19. The Commission for the Conservation of Antarctic Marine Living Resources has continued to play an important role in the development and implementation of measures aiming at reducing seabird mortality in longline fisheries. It has urged its member States to become parties to and implement the Agreement for the Conservation of Albatrosses and Petrels under the Convention on the Conservation of Migratory Species of Wild Animals.

20. Towards the implementation of its Conservation Measures, the Commission for the Conservation of Antarctic Marine Living Resources is increasingly cooperating with non-contracting parties. In addition, it has further strengthened cooperation with the Antarctic Treaty parties, through participating as an observer in the Antarctic Treaty Consultative Meetings and the meetings of the Committee for Environmental Protection, and assisting the newly established Antarctic Treaty secretariat.

E. Scientific Committee on Antarctic Research

21. The Scientific Committee on Antarctic Research is an interdisciplinary committee of the International Council for Science (ICSU), established in 1958. Its mission is to facilitate and coordinate Antarctic research and to identify issues emerging from greater scientific understanding of the region that should be brought to the attention of policymakers. Its membership in 2005 is 28 Full Members, four Associate Members and 7 ICSU Members.

22. In October 2004 the Committee completed its restructuring. Three standing scientific groups on geosciences, life sciences and Physical Science form the new science framework. A new set of five major scientific research programmes was approved: (a) Antarctica and the Global Climate System, a study of the modern ocean-atmosphere-ice system; (b) Antarctic Climate Evolution, a study of climate change over the past 34 million years since glaciation began; (c) Evolution and Biodiversity in the Antarctic, a study of the response of life to change; (d) Subglacial Antarctic Lake Environments, a study of the chemistry and biology of lakes long-buried beneath the ice sheet; and (e) Interhemispheric Conjugacy Effects in Solar-Terrestrial and Aeronomy Research (ICESTAR), a study of how the Earth's outer atmosphere responds to the changing impact of the solar wind at both poles.

23. Through its Standing Committee on the Antarctic Treaty System, the Scientific Committee on Antarctic Research will continue to bring key scientific issues to the attention of the Antarctic Treaty Consultative Meetings. The Committee is also contributing significantly to the International Polar Year's Science and Implementation Plans prepared by ICSU and the World Meteorological Organization (WMO).

F. Council of Managers of National Antarctic Programmes

24. The Council of Managers of National Antarctic Programmes was established in 1988 to provide a forum to facilitate the exchange of views among directors and logistics managers of national Antarctic agencies, improve the effectiveness and the safety of operations in Antarctica and discuss international cooperation in operations and logistics. The Council has a permanent Standing Committee on Antarctic Logistics and Operations and various task-oriented committees or working groups.

25. The Antarctic Environmental Officers Network, under the umbrella of the Council of Managers of National Antarctic Programmes, has continued to address environmental monitoring and environmental impact assessment to provide support for individual members' activities in those areas. Recently, the Network prepared the

Practical Guidelines for Developing and Designing an Environmental Monitoring Programme in Antarctica.

26. The Council of Managers of National Antarctic Programmes worked closely with the Scientific Committee on Antarctic Research in providing the Antarctic Treaty Consultative Meeting and the Committee for Environmental Protection with technical papers on emerging issues.

27. The Council has recently set up an International Polar Year Coordinating Group to help coordinate logistical aspects of projects implemented in conjunction with the Year.

28. The Council has an observer status on the Hydrographic Committee on Antarctica of the International Hydrographic Organization, along with the International Association of Antarctica Tour Operators and the Scientific Committee on Antarctic Research.

G. International organizations

1. Antarctic and Southern Ocean Coalition

29. Since the Twenty-fifth Antarctic Treaty Consultative Meeting, the Antarctic and Southern Ocean Coalition and its member groups have participated in and monitored work carried out under the Antarctic Treaty system. The Coalition's regional or national representatives have been active in Antarctic Treaty States in the Americas, Australasia, Europe and Southern Africa and in India, the Republic of Korea, the Russian Federation and Ukraine.

30. The Coalition maintained a strong interest in the implementation of the Madrid Protocol, with particular attention to the effectiveness of the environmental impact assessment process, the establishment of protected areas including marine areas, the development of one or more annexes on liability and minimizing the impacts of infrastructure. In addition, the Coalition is actively seeking the curbing of illegal, unregulated and unreported fishing activities in the Commission for the Conservation of Antarctic Marine Living Resources Convention area and the regulation by Antarctic Treaty States of the rapidly growing Antarctic tourism industry and of the bioprospecting industry.

2. International Association of Antarctic Tour Operators

31. The International Association of Antarctic Tour Operators was founded by seven private tour operators in 1991 and, as of May 2005, had grown to include 78 members. The majority of tourist ships to Antarctica are members of the Association and some yacht operators are joining them.

32. Since the Twenty-fifth Antarctic Treaty Consultative Meeting, the Association has continued to focus its activities on increasing cooperation and field coordination among its members; promoting effective environmental impact assessments; preventing the introduction of alien organisms; promoting self-sufficiency and proper conduct among visitors; developing emergency response and contingency plans; and promoting specific guidelines for sites where the growing bulk of tourism occurs.

3. International Hydrographic Organization

33. The permanent Working Group on Cooperation in Antarctica of the International Hydrographic Organization (IHO) has reported annually to the Consultative Meetings since its establishment in 1992. The group is currently known as the IHO Hydrographic Committee on Antarctica. The Committee's main focus is the production of 91 international charts, of which 45 had been published by June 2005. An additional 11 charts that will cover areas of great tourism interest and facilitate safer operations are being considered.

4. Intergovernmental Oceanographic Commission

34. The Intergovernmental Oceanographic Commission was founded in 1960 within the United Nations Educational, Scientific and Cultural Organization and implements programmes within three subject areas: (a) marine sciences; (b) ocean services; (c) training, education and mutual assistance and capacity-building. In 1967 IOC established the Intergovernmental Committee for the Southern Ocean to promote and coordinate oceanographic observations and research in the Southern Ocean.

35. The Commission took a lead role in establishing the Global Ocean Observing System which aims to meet the need for: (a) forecasting climate variability and change; (b) assessing the state of health of the marine environment and its resources (including the coastal zone); and (c) supporting an improved decision-making and management process which takes into account potential natural and man-made changes in the environment and their effects on human health and resources.

5. International Maritime Organization

36. The Convention establishing the International Maritime Organization (IMO) was adopted on 6 March 1948 and entered into force on 17 March 1958. The IMO Assembly met for the first time on 6 January 1959.

37. The involvement of IMO in Antarctic matters relates primarily to the prevention and control of marine pollution from ships and to maritime safety. IMO adopted the new Guidelines for Ships Operating in Arctic Ice-Covered Water in 2002, and a new convention to prevent the potentially devastating effects of alien invasive species in ballast water, the International Convention for the Control and Management of Ships' Ballast Water and Sediments, in February 2004.

6. World Conservation Union

38. World Conservation Union is a partnership of States, governmental agencies and non-governmental organizations founded in 1948. The mission of the Union is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature so as to ensure that any use of natural resources is equitable and ecologically sustainable. The Union has established six commissions of which two, those on protected areas and on environmental law, have made significant contributions to the its Antarctica Programme.

39. In November 2004, the third IUCN World Conservation Congress adopted a resolution urging all parties to the Madrid Protocol and to the Commission for the Conservation of Antarctic Marine Living Resources to take steps to develop a

comprehensive network of protected areas, with special attention to protecting marine habitats.

7. United Nations Environment Programme

40. The United Nations Environment Programme was established in 1972 to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

41. The involvement of UNEP in Antarctica and the Southern Ocean stems from the critical role they play in the global environmental system. Major processes of interaction between the atmosphere, oceans, ice and biota affect the entire global system through feedbacks, biogeochemical cycles, circulation patterns, transport of energy and pollutants, and changes in ice mass balance. In addition, the region is of immense value for the conduct of research essential to understanding the global environment. Through its various programmes, UNEP addresses assessment, management and policy aspects of global and regional environmental issues, many of which are relevant to Antarctica and the Southern Ocean.

42. UNEP has closely linked global programmes on the conservation, management and monitoring of the marine environment and its living resources. Those programmes include the Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and the Regional Seas Programme. Major periodic coordination meetings are organized among the regional seas to share experiences, to which the Convention for the Conservation of Antarctic Marine Living Resources is also invited.

43. The assessment programme of UNEP has responsibility for keeping under review the state of the environment. UNEP launched the second volume of the new series *Global Environment Outlook Yearbook* in 2005, where specific sections are dedicated to the poles.

44. UNEP administers the secretariats of various global conventions dealing with subjects directly relevant to Antarctica and the Southern Ocean. They include the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer, the Stockholm Convention on Persistent Organic Pollutants, the Convention on Biological Diversity, the Convention on International Trade in Endangered Species of Wild Fauna and Flora and the Convention on the Conservation of Migratory Species of Wild Animals under which the recent Agreement on the Conservation of Albatrosses and Petrels was negotiated.

8. World Meteorological Organization

45. The World Meteorological Organization (WMO), which was established in 1950, is a specialized agency of the United Nations system. The major activity of WMO, providing the international framework for meteorological observations and data exchange, has contributed considerably to weather forecasting.

46. WMO maintains the World Weather Watch, of which an important part is the Antarctic Basic Synoptic Network. That well implemented network and the timely transmission of the observational data by means of the Global Telecommunications

System are essential in providing meteorological data for global weather analysis and prediction models and research. The data is fundamental to our understanding of contemporary processes of global relevance such as ozone depletion, atmospheric pollution, climate change, the melting of ice shelves and glaciers and sea level rise. All require Antarctic data to ensure true global perspective.

47. The World Climate Research Programme, initiated jointly by WMO and ICSU, has a significant Antarctic component. The World Climate Research Programme has specifically included research on climate and cryosphere, the main purpose of which is to provide a globally integrated approach to the study of the role of the cryosphere in the climate system.

48. WMO continues to cooperate with Antarctic Treaty Consultative Meeting, Scientific Committee on Antarctic Research, Council of Managers of National Antarctic Programmes and Intergovernmental Oceanographic Commission.

49. WMO agreed to co-sponsor with ICSU the International Polar Year 2007-2008 and contributed to the preparation of the Year's Science and Implementation Plans. A Joint ICSU-WMO Steering Committee was established in September 2004 to lead the planning of IPY.

III. Recent developments pertaining to the Antarctic environment

A. Science and support activities

1. Science support sites

50. A number of science support developments are under way, planned or announced. They include the building of six new stations (Belgium, China, Czech Republic, Estonia, India and the Republic of Korea); the rebuilding of two stations (Halley VI (United Kingdom) and Neumayer II (Germany)); the upgrading of three existing stations (Troll (Norway), Concordia (France and Italy) and O'Higgins (Chile)); and the development of four transportation links (airlink (Australia); the Dronning Maud Land Air Network project in East Antarctica (consortium of 11 States); the Surface Traverse (United States); and an overland route between the SANAE IV and Neumayer stations (South Africa and Germany)).

51. Australia has installed wind turbines at Mawson Station as part of its renewable energy programme in Antarctica.

2. Weather and climate change

52. An expedition in Prince Charles Mountains recorded meteorological data that will help forecast weather for the area.

53. A study reported a warming of the surface layer characterized by a significant increase of inter-annual oscillations and a significant spatial variability. In 2002, the greatest warming (with a positive anomaly of 1.5°C in some areas) was observed in the East and Central Antarctica.

3. Long-range pollution

54. Studies on the concentration of persistent organic pollutants such as polychlorinated biphenyl and pesticides like dichlorodiphenyltrichlorethane, in soil and lichen samples from the eastern coast of Antarctica highlight atmospheric long-range transport of those pollutants from Africa, South America or Australia.

55. An analysis of 16 trace metals in 35 samples from Eastern Antarctic lake waters, snow and ice showed low concentrations of those metals, except for five of them that resulted from the accumulation of particles from rock disintegration.

4. Earth sciences and glaciology and global change

56. An extensive geological survey was carried out in the Prince Charles Mountains that will provide information on the recent uplift and landscape evolution in that area. Aerial surveys collecting data on ice gravity and magnetism were also conducted in that area. A geological-geophysical database for the Indian Ocean sector of East Antarctica has been prepared. A topographic survey was carried out around the summit of Dome A, including the drilling of a 108 metre ice core.

57. The inter plate motion and the crustal deformation between India and Antarctica was studied to help understand tectonic and geodynamical processes that take place in the Indian Ocean.

58. The spacing, altitude and age of beach ridges are being studied to help assess climatic variations during the Holocene.

59. Aerial surveys of glaciers in the Antarctic Peninsula and the Amundsen Sea regions were carried out in 2002 and 2004. The study will enable to assess recent changes and determine the stability of glaciers. The ice sheet dynamics in central Dronning Maud Land is also being studied.

60. Studies, using remote sensing data, established a close link between the dynamics of the marginal part of Antarctic Ice Sheet and the hydro-meteorological conditions near the coast. High ice motion was correlated with the intensity of cyclonic activity, heat advection and the increase of snow accumulation on the ice sheet.

61. Brown Glacier, Heard Island, had retreated by 50 metres over three years, with the lower slopes of the glacier having lost as much as 11 metres in thickness, while Collins Glacier, King George Island, retreated by some 200 metres between 1987 and 2005.

62. The ice drilling project on the north-eastern corner of the Amery ice shelf near Davis Station continued. During the 2003-2004 season the longest ice core retrieved was 147 metres containing a climate record of some 200 years.

63. Various sections of the 3,624-metre Vostok deep ice core were analysed to study the occurrence of various heavy metals linked to climate changes during the past 240,000 years.

64. Subglacial Lake Vostok is continuing to generate much scientific interest. No coring of the lake has yet taken place, with drilling stopping approximately 100 metres above the lake. Ice overlying the lake is 3,750 to 4,350 metres thick. A comprehensive environmental evaluation for the coring project has been submitted to the Committee for Environmental Protection. The Committee recommended that

a number of insufficiencies in the evaluation be addressed prior to penetrating the lake. Meanwhile, further understanding of the lake is being gained through the analysis of the ice cores collected above the lake and through seismological studies.

65. An oceanographic study revealed substantial change in the physical characteristics of deep waters in the Southern Ocean east of the Kerguelen Plateau, when compared with a decade ago.

5. Life sciences

66. A study carried out by the Scientific Committee on Antarctic Research highlights that cold-blooded Antarctic marine species appear to have limited a physiological capacity to deal with temperature change and restricted abilities to evolve new traits. Even a small warming of the Southern Ocean seems likely to initiate major changes in species survival.

67. Reductions in breeding populations of three seabird species in one Subantarctic island were recorded. Increases in sea surface temperatures (1.4° C between 1949 and 1998) are negatively affecting food availability for those populations. A reduction in penguin nests in Admiralty Bay, South Shetland Island, was also reported. It is most likely related to a decline in krill due to retreating pack ice in the area. Two independent studies also showed a correlation between variations in krill biomass and breeding birds in Subantarctic islands and the El Niño phenomenon.

B. Environmental monitoring and state of the environment report

1. Environmental monitoring

68. New practical guidelines for developing and designing environmental monitoring programmes were endorsed in 2005.

69. An Antarctic site inventory containing biological data and site-descriptive information of 93 sites on the Antarctic Peninsula was prepared and is being updated by the United States and United Kingdom.

70. The Scientific Committee on Antarctic Research and the Council of Managers of National Antarctic Programmes organized a workshop on biological monitoring. An intersessional contact group has been established to look at the coordinated monitoring of activities in Antarctica, including the establishment of a consistent methodology and central data collection process.

71. Specific monitoring programmes are being implemented by various nations. Italy has continued to develop and implement an environmental monitoring system at Terra Nova, in particular with regard to the waste water treatment plan and the incinerator. No significant contamination was detected. India has continued to monitor the environmental impacts of Maitri Station. Uruguay undertook magnetic surveys around the Artigas Station. Air quality monitoring is carried out around Maitri Station by India and samples of water and wastewater are collected for physico-chemical analysis.

2. State of the Antarctic environment report

72. In 2001 New Zealand completed and published *Ross Sea Region 2001: A State of the Environment Report for the Ross Sea Region of Antarctica.*

73. Since the Twenty-fourth Antarctic Treaty Consultative Meeting, four intersessional contact groups have been established to discuss the development of a state of the Antarctic environment reporting system, in particular a Web-based system for routinely reporting on key environmental indicators. Further work is currently required to develop the framework and criteria for the selection of indicators.

C. Environmental impact assessment

74. In accordance with the Madrid Protocol, environmental impact assessment procedures have been developed for activities undertaken in Antarctica. Where the impact will be less than minor or transitory, an initial environmental evaluation is to be prepared. If the impact is likely to be more than minor or transitory, a comprehensive environmental evaluation must be carried out.

75. The 1999 Guidelines for Environmental Impact Assessment in Antarctica have been revised to ensure that cumulative impacts are explicitly addressed. The impacts of marine acoustic technology on Antarctic organisms were given further examination. Two workshops organized by Germany and the Scientific Committee on Antarctic Research respectively focussed on the issue. The Committee will provide an update on marine acoustic technology in 2006.

76. Since the Twenty-fifth Antarctic Treaty Consultative Meeting, eight comprehensive environmental evaluations have been submitted to the Committee for Environmental Protection, including the upgrading of one station (Troll (Norway)); the rebuilding of two stations (Neumayer II (Germany) and Halley VI (United Kingdom)); the building of one new station (Czech Scientific Station); three large scientific projects (water sampling of subglacial Lake Vostok (Russian Federation); the Antarctic Geological Drilling Consortium stratigraphic drilling programme (New Zealand); Project IceCube on the installation of a neutrino telescope at the South Pole Station (United States)); and, one transportation project (a new surface traverse to South Pole (United States)).

D. Safety of operations, emergency response and contingency planning

77. The Council of Managers of National Antarctic Programmes carried out a review of the IMO Guidelines for Ships Operating in Arctic Ice-covered Waters that were adopted in December 2002, to evaluate their applicability to the Antarctic. Based on the Council's review, new Guidelines for Ships Operating in Arctic and Antarctic Ice-covered Waters were developed and endorsed by the Antarctic Treaty Consultative Meeting in 2004. The new guidelines were transmitted to IMO for its earliest consideration.

78. Chile and Argentina conducted a joint naval exercise in the 2002-2003 season focussing on search, rescue, recovery operations; environmental protection; and the transfer of individuals and materials among Antarctic stations in response to requests.

79. An Argentine ice-breaker provided assistance to the ice-bound vessel Magdalena Oldendorff in June-July 2002. Germany reported on an aircraft accident which occurred at Rothera Research Station in January 2005. Two of the crew were slightly injured. The aircraft was dismantled and removed from Antarctica with support from the United Kingdom and South Africa. A member of an expedition by China travelling to Dome A was rescued by the United States in December 2004. A marine biologist was attacked and drowned by a Leopard Seal at Rothera Research Station in July 2003. Since the incident the United Kingdom had changed its diving procedures. Eight scientists of the Republic of Korea went missing at sea in December 2003. Large operations carried out with the support of Argentina, Brazil, Chile, China, Russian Federation, Uruguay and an International Association of Antarctica Tour Operators tourist vessel succeeded in rescuing seven of them.

E. Waste disposal and waste management

80. Annex III to the Madrid Protocol provides guidelines for waste disposal and waste management by parties.

81. Waste removal from the abandoned Australian National Antarctic Research Expeditions station at Heard Island, from Thala Valley near Casey Station and from previous expeditions in the Prince Charles Mountains was carried out by Australia. The United Kingdom launched a five-year programme to remove wastes from abandoned facilities or old dumps, starting with Signy Research Station and Fossil Bluff, Alexander Island. The Russian Federation also removed old building and equipment waste from Bellingshausen station and Japan established a plan to clean up old waste dumps at Syowa station. China removed and cleaned up the old power station at Great Wall Station.

82. Waste water treatment was also given attention. Waste water treatment systems were installed at Scott Base by New Zealand, at Progress Station by the Russian Federation and at Pedro Vicente Maldonado by Ecuador. Sweden carried out a feasibility study for grey water treatment at Wasa Station and the United Kingdom monitored the effectiveness of a sewage treatment plan at Rothera Station.

83. Argentina undertook an environmental restoration at Marambio Station, including the removal of waste and the installation of a new waste water treatment system. At Progress and Novolazarevskaya stations, an incinerator was installed by the Russian Federation.

F. Prevention of marine pollution

84. Annex IV to the Madrid Protocol covers marine pollution. It regulates the discharge of sewage, oil or oily liquids or other noxious liquids, the disposal of garbage, preventive measures and emergency preparedness.

85. In view of the high potential for environmental impacts of heavy fuel oils (heavier than IFO-180) in the event of spills, the Antarctic Treaty Consultative Meeting decided to consult with IMO to examine mechanisms to restrict the use of such fuel oils in the Antarctic Area (Decision 8, 2005).

86. In order to promote compliance with the Protocol, and in particular Annex IV, the Antarctic Treaty Consultative Meeting recommended parties that publish advice to mariners and vessel operators to include details of the Protocol, in particular of Annex IV (Resolution 1, 2003).

87. Marine debris is a continuous concern in the Southern Ocean. The Commission for the Conservation of Antarctic Marine Living Resources annually reviews the issue of marine debris and has implemented a suite of measures to monitor and evaluate the impact of anthropogenic debris and waste on marine living resources in the Convention Area. They include: reporting by fishing vessels of lost or discarded fishing gear; periodic surveys of marine debris on beaches and in seal and penguin colonies near coastal stations; reporting accidental entanglement(s) in, or ingestion of, marine debris by birds, marine mammals, fish and other animals; and recording observations of marine mammals and seabirds soiled with hydrocarbons such as fuel oil.

G. Ozone depletion

88. The Antarctic springtime ozone hole is one of the most dramatic manifestations of global change. In 2004, the size of the ozone hole was smaller than the average over the past decade, although the total amount of ozone destroyed, which relates to the size, depth and persistence of the ozone hole, was estimated to be much higher than most years in the past decade. In that regard it should be noted that annual variations in the depth, size and persistence of the ozone hole depend significantly on changing meteorological conditions in the stratosphere.

89. Models suggest that the minimum ozone concentration in the stratosphere above Antarctica will occur prior to 2010 and that recovery to 1980 levels may be expected in the middle of the twenty-first century. Future ozone concentrations are mainly driven by the changes in stratospheric halogen loading, with ozone recovery occurring after the peak of halogen loading.

90. Strong caution is urged regarding the cumulative effect of many small continuing uses and emissions justified with pleas of insignificant impact, that could add a significant amount of ozone-depleting chlorine and bromine to the atmosphere.

H. Conservation of Antarctic fauna and flora

91. Annex II to the Madrid Protocol covers the conservation of Antarctic fauna and flora, including their protection, the introduction of non-native species or diseases, exchange of information and specially protected species.

92. A review of scientific and technical aspects of Annex II and of the conservation status of Antarctic fauna and flora was initiated. New guidelines for the designation of Antarctic "specially protected species" were adopted. The list of "specially protected species" will be revised at the eleventh meeting of the Committee for Environmental Protection using the new guidelines.

93. The introduction of non-native species or diseases, including from ballast water and hull fouling, is a global concern. A workshop on the issue will be convened by New Zealand before the Twenty-ninth Antarctic Treaty Consultative

Meeting. It is expected that the workshop will help develop proposals to address such issues.

94. New guidelines for the operation of aircraft near concentrations of birds in Antarctica were adopted in 2004.

95. The mortality of seabirds resulting from illegal, unregulated and unreported fishing in the Commission for the Conservation of Antarctic Marine Living Resources Convention Area remains a problem and a concerted international effort is required to resolve it. The Commission for the Conservation of Antarctic Marine Living Resources played an important role in the creation and implementation of measures to reduce seabird mortality in longline fisheries. In addition, a new Agreement on the Conservation of Albatrosses and Petrels was adopted under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals Convention in June 2001. The Agreement entered into force on 1 February 2004. Seven States are parties to the Agreement.

96. The reported fisheries catches in tons are given in table 1 below. As can be seen in the table and in previous reports, reported catches of krill have remained relatively stable since 1992/93 ranging from 80,000 to 130,000 tons, while reported catches of mackerel icefish (*Champsocephalus gunnari*) and toothfish (*Dissostichus ssp.*) increased significantly until the 2002/2003 season, but dropped during the 2003/2004 season.

Table 1
Reported fisheries catches in tons, 2000/2001, 2001/2002, 2002/2003 and 2003/2004

	Year			
	2000/2001	*2001/2002*	*2002/2003*	*2003/2004*
Krill	104 182	125 987	117 728	118 166
Icefish	2 097	3 532	4 331	2 762
Toothfish	13 804	15 341	18 508	13 766

97. Illegal, unregulated and unreported fishing of toothfish remained one of the major issues faced by the Commission for the Conservation of Antarctic Marine Living Resources over the last eight years. During the 2003/2004 season, illegal, unregulated and unreported fishing in toothfish was estimated at 15,992 tons. The Commission reinforced its measures to address such activities. In addition to the Catch Documentation Scheme, the System of Inspections and the Automated Satellite-Linked Vessel Monitoring System, the Commission has encouraged its member States to ratify the 1993 FAO Compliance Agreement and the 1995 Code of Conduct for Responsible Fisheries, and to participate in the FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. The Commission also maintains a database on vessels known to have fished in contravention of its conservation measures.

98. In November 2002, the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora adopted a resolution regarding trade in toothfish requesting, inter alia, parties to adopt the

Commission for the Conservation of Antarctic Marine Living Resources Catch Documentation Scheme and to adhere to the Commission's Convention if they are involved in toothfish fishing or trading.

99. The reported capture and killing of seals between 2000/2001 and 2003/2004 is given in table 2 below. A number of countries are not reporting systematically on seal captures or kills. In September 2002, the Conference of Parties to the Convention on the Conservation of Migratory Species of Wild Animals adopted the proposal to list the South American fur seal on appendix II.

Table 2
Reported capture and killing of seals, 2000/2001, 2001/2002, 2002/2003 and 2003/2004

	Year			
	2000/2001	*2001/2002*	*2002/2003*	*2003/2004*
Captured and released	3 247[a]	168[c]	2 301[d]	3 709[f]
Killed	1[b]	—	1[e]	1[g]

[a] By Chile (798), Japan (300), Norway (52) and United States (2,097).
[b] By Norway.
[c] By Argentina (164) and Japan (2).
[d] By Argentina (166), Chile (898), Poland (32) and United States (1,205).
[e] By United States.
[f] By Argentina (215), Chile (700), Germany (19), and United States (2,775).
[g] By Germany.

I. Area protection and management

100. Annex V to the Madrid Protocol covers area protection and management. With the entry into force of Annex V in May 2002, all previously designated Specially Protected Areas (25) and Sites of Special Scientific Interest (34) became Antarctic Specially Protected Areas (ASPA) and were renamed and renumbered accordingly by Decision 1 (2002). Since the Twenty-fourth Antarctic Treaty Consultative Meeting, three new Antarctic Specially Protected Areas and two new Antarctic Specially Managed Areas were designated, including the McMurdo Dry Valleys that form the largest relatively ice-free region in Antarctica.

101. A management plan for all Antarctic Specially Protected Areas and new Antarctic Specially Managed Areas is required by Annex V. Accordingly, 33 revised or new management plans for existing or newly established protected areas have been adopted since the Twenty-fourth Antarctic Treaty Consultative Meeting. Two of the Antarctic Specially Protected Areas for which a revised management plan was adopted in 2003 covered solely marine areas, which was a significant development in the Antarctic protected area system. A new archiving website containing information on Antarctic Protected Areas has been established.

102. Further work on a Systematic Environmental Geographic Framework, as requested by Annex V, has been carried out, based in particular on a classification of environments derived from a number of continent-wide geographic layers. Further

work will be undertaken towards a finer-scale classification for ice-free land environments.

103. Following Resolution 4 (2001), the description of many Historic Sites and Monuments has been updated. Three sites that no longer exist have been removed. One new site has been added, namely a Memorial plaque at India Point, Humbolt Mountain, Dronning Maud Land. Two existing sites were subsumed into one new site: Cape Denison, Commonwealth Bay, George V Land.

J. Question of liability

104. In accordance with article 16 of the Madrid Protocol, the Consultative Parties undertook to elaborate rules and procedures relating to liability for damage arising from activities covered by the Protocol, to be included in one or more annexes. After 12 years of negotiations, a new Annex to the Protocol, on Liability Arising From Environmental Emergencies, was adopted in June 2005.

105. Since the scope of the new annex is limited to environmental emergencies, it did not completely discharge the obligations under article 16 of the Protocol. It was, therefore, agreed to establish not later than five years after the adoption of the annex a time frame for the resumption of negotiations to elaborate further rules and procedures as may be necessary relating to liability for damage arising from activities covered by the Protocol.

K. Antarctic tourism and other non-governmental operations

106. From 1992/1993 to 2004/2005 there was a tremendous increase (308 per cent) in the number of shipborne tourists (see table 4 below). The 2004-2005 season recorded the highest number of shipborne tourists totalling 27,324. The majority of Antarctic seaborne voyages are to the Antarctic Peninsula region. Land-based tourism has also increased greatly from 106 tourists in 1996/1997 to 878 in 2004/2005, as shown in table 4.

107. Antarctic tourism activities are increasing, as is their diversity (camping, climbing, kayaking and scuba-diving), presenting new management challenges. The practical management of high-risk (adventure) tourism and its potential impact on national programmes and tour operators in terms of search and rescue operations for unsupported adventure tourists is a growing concern.

108. In view of those challenges, several intersessional working groups were consecutively established and a Meeting of Experts on Tourism and Non-governmental Activities was convened in March 2004. Some of the key issues included the assessment and monitoring of cumulative impacts; the establishment of a database; the development of a regulatory framework, including accreditation and site-specific guidelines; and safety and self sufficiency for high-risk (adventure) tourism.

109. As a first step towards a more rigorous control of tourism activities, the Antarctic Treaty Consultative Meeting adopted two resolutions to enhance information exchange and consultation and to further the development and implementation of site-specific guidelines. However, no consensus has yet been

reached on critical issues, such as land-based and high-risk (adventure) tourism, leaving tourism to be regulated to a large extent by the industry itself.

110. Pending the adoption of a more comprehensive regulatory framework on tourism activities, the industry, through the International Association of Antarctic Tour Operators, continued to further the development and the implementation of its own regulations, in particular with regard to site-specific guidelines, emergency response, the prevention of alien disease introduction and translocation, and post-visit site reporting.

111. Antarctic tour operators continued to support operations and programmes in the Antarctic by providing transport.

Table 3
Tourist numbers in Antarctica

Year	*Number of shipborne tourists*	*Number of tourist ships and sailing vessels*	*Number of voyages*	*Number of land-based tourists*	*Sightseeing flights*
1992-93	6 704	12	59	—	—
1993-94	7 957	11	65	—	—
1994-95	8 098	14	93	—	—
1995-96	9 212	15	113	—	—
1996-97	7 322	13	104	106	10
1997-98	9 473	13[a]	92[b]	131	9
1998-99	9 857	15[a]	116	79	9
1999-2000	14 623	21[a]	154	139	31
2000-01	12 109	32[a]	131[b]	127	25
2001-02	13 458	37[a]	117[b]	159	15
2002-03	15 687	47[a]	136[b]	308	15
2003-04	24 318	51[a]	180[b]	517	19
2004-05	27 324	52[a]	207[b]	878	13

[a] Includes sailing vessels/yachts where the information was available.
[b] Does not include sailing vessels/yachts.

L. Biological prospecting

112. Biological prospecting is an emerging sector based on increased cooperation between the private sectors, academic centres, medical centres and foundations. Although the sector went through a phase of significant recession between 2001 and 2002, it has fully recovered. There is a growing interest for bioprospecting for deep seabed genetic resources. However, it is not easy to determine whether those resources were collected under or near the Southern Ocean.

113. As an emerging issue, bioprospecting received the attention of the Antarctic Treaty Consultative Meeting in 2003. Since 2004 it became an official agenda item of the Antarctic Treaty Consultative Meeting. Discussions have been held on a number of issues, including trends in bioprospecting and developments in

bioprospecting, at international forums. In 2005, a resolution on bioprospecting was adopted. The resolution, which aims to ensure information exchange on scientific programmes, their observations and results, in line with article III (1) of the Antarctic Treaty, is a first step towards the regulation of bioprospecting in the Antarctic Area.

M. The Arctic, Antarctica and the International Polar Year 2007-2008

114. The Arctic Council was inaugurated in 1996 and provides for cooperation, coordination and integration among the eight Arctic States. The Council includes Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden and the United States. The major indigenous organizations in the Arctic are also permanent participants in the Council.

115. Although the legal situations in the Arctic and Antarctica are quite different, a number of scientific and environmental issues present similarities. Consequently, studies are being carried out in both polar regions, including on the role of ice and frozen ground in climate change (the Climate and Cryosphere Project); the shape of Earth, or the geoid; the polar electromagnetic fields; and variations in the concentration of ozone in the stratosphere.

116. The third International Polar Year 2007-2008 will provide an opportunity to galvanize ongoing research programmes and promote new activities in polar regions. A framework for the Year was adopted in October 2004. Six scientific themes were identified: (a) present state of the polar environment; (b) environmental and social changes in the polar regions and future changes; (c) polar-global linkages and interaction; (d) investigating the frontiers of science in the polar regions; (e) polar regions as vantage points for observatories of Earth and space; and (f) circumpolar human societies and their contribution to global cultural diversity.

117. An ICSU/WMO Joint Committee was set up to lead the organization of the year, in particular to ensure that arrangements are made for effective international coordination, guidance and oversight. An International Programme Office on the International Polar Year was established at the British Antarctic Survey in Cambridge (United Kingdom).

IV. Concluding remarks

118. **The Antarctic Treaty system continues to provide a unique example of international cooperation. Designated as a natural reserve, devoted to peace and science, Antarctica is the scene of successful international cooperation in research, in particular in connection with the study of global changes.**

119. **The Committee for Environmental Protection that has met eight times since the entry into force of the Madrid Protocol on 14 January 1998 continues to be a dynamic forum to discuss and address environmental issues related to human activities. The newly established and operational Secretariat will become a central repository of Antarctic information in particular with regard to Antarctic Treaty meetings and activities.**

120. **However, there are some issues of concern and challenges that need to be addressed. Illegal, unregulated and unreported fishing for toothfish in the Southern Ocean still exceeds reported catches despite major efforts to address such activities. Further enforcement and cooperation are still required from all States involved to bring such activities to a halt. The tourism industry has increased tremendously over the last decade. In addition, biological prospecting is an emerging issue. Efforts should be continued to ensure that commercial activities will not impact on the successes of the Antarctic Treaty system, in particular in securing Antarctica as a natural reserve, devoted to peace and science. Global changes, in particular climate change and the depletion of the ozone layer, remain major threats to the integrity of the Antarctic environment.**